DOCUMENT RESUME

ED 349 073 JC 920 464

AUTHOR	Avens, Cynthia; Zelley, Richard
TITLE	QUANTA: An Interdisciplinary Learning Community (Four Studies).
INSTITUTION	Daytona Beach Community Coll., FL.
PUB DATE	92
NOTE	44p.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Persistence; College Freshmen; Community Colleges; *English Instruction; Graduate Surveys; *Humanities Instruction; Intellectual Development; *Interdisciplinary Approach; Participant Satisfaction; *Psychology; Questionnaires; School Holding Power; Student Attitudes; *Thematic Approach; Two Year Colleges; Two Year College Students; *Unified Studies Curriculum
IDENTIFIERS	Daytona Beach Community College FL

ABSTRACT

QUANTA is a year-long interdisciplinary program at Daytona Beach Community College (Florida) that seeks to establish a learning community of students and teachers. Three courses (English, Pyschology, and Humanities) are integrated around a common theme each semester of the freshman year, and are taught using a collaborative teaching model. This collection of reports on the QUANTA learning community includes introductory background information and four research studies. The first study report summarizes an assessment of the intellectual development of members of the QUANTA class of 1989-90. The assessment utilized a measure based on Perry's scheme of cognitive development. This report indicates that the mean change in position on the Measure of Intellectual Development for QUANTA students (.20) in one semester was greater than the mean change for a normative sample (.18) after 4 years of college. The second study report provides QUANTA student retention data for fall 1985 (in which 69 students were enrolled) through winter 1991 (in which 67 students were enrolled), revealing that the mean retention rate was 92% for fall, and 94% for winter. The third study report summarizes findings of student evaluations of the QUANTA program from winter 1988 through winter 1992. In addition to providing verbatim responses to open-ended questions, the report presents tables of students' ratings of 10 aspects of the program by year. Finally, the fourth study report presents the findings of a survey of the attitudes of QUANTA alumni (n=55) toward the program. Data tables and survey instruments are included. (MAB)

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QUANTA: An Interdisciplinary Learning Community
(Four Studies)

Cynthia Avens

Richard Zelley

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QUANTA: An Interdisciplinary Learning Community

QUANTA is an interdisciplinary learning community of 75 students and three faculty at Daytona Beach Community College. Three courses, English, Psychology and Humanities are integrated around a common theme each semester of the freshman year. The faculty teaching these three courses are involved in collaborative teaching. QUANTA reflects the student body at DBCC by including a mixture of average-ability students, honors students, and older non-traditional students.

The emphasis in QUANTA is on making connections. The interdisciplinary format requires students to make connections between the disciplines, thus encouraging the ability to integrate and synthesize ideas. Making connections with one another is also stressed in the learning community. Students are encouraged to interact with each other and their teachers. Students cooperate with each other through group projects and discussions, experiencing diverse perspectives on issues and problems.

Students' evaluations of the QUANTA program since its inception in 1984 indicate that this interdisciplinary, collaborative approach to learning has had a very positive effect on students' motivation, ability to cooperate and communicate with others, and ability to critically evaluate ideas. Research conducted with the "Measure of Intellectual Development" has shown a high level of cognitive growth among students participating in the QUANTA program.

Colleagues who are interested in learning more about the QUANTA program or who would like assistance in establishing a learning community at their own institution may contact:

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QUANTA: An Interdisciplinary Learning Community

QUANTA is an interdisciplinary learning community of 75 students and three faculty at Daytona Beach Community College. Three courses: English, Psychology, and Humanities are integrated around a common theme each semester of the freshman year. The faculty are involved in collaborative teaching and the students engage in collaborative, active learning in the program.

The objectives of the learning community are to develop:

a.) critical thinking skills
b.) an attitude of openmindedness, curiosity, and creativity
c.) interpersonal communication skills
d.) ability to cooperate in a group
e.) a holistic attitude through the ability to synthesize a variety of ideas and viewpoints
f.) effective reading, writing, and study skills to serve as a strong foundation for advanced college courses

The objectives have been achieved as follows:

Objectives a and b:

Emphasis is placed on "active learning" by students in which teachers serve more as facilitators of learning rather than dispensers of knowledge. These "active learning" techniques such as small group projects, group discussions, role plays, interviews, and observations help students become engaged in their learning and develop openmindedness, curiosity, and creativity. Critical thinking develops when students are encouraged to express and support their own viewpoints and ideas and also to listen to others in order to see multiple perspectives on an issue. Within the collaborative teaching framework, they see that their teachers also have differing perspectives and views on many issues! This forces them to think critically instead on relying on the "authority" to give them the "right answer."

Objectives c and d:

Explicit instruction and practice in communication skills and effective group work is part of the psychology component of the QUANTA program. This is necessary because emphasis is placed on small group activities and projects in which students must collaborate together in order to reach their goals. As the culmination of their group work each semester, students engage in a Program Seminar in which they work in groups of six to eight to research a contemporary issue related to the three courses and develop a creative format for presenting this information to the entire learning community.

Objectives e and f:

Material for the three courses is integrated through team teaching so that students obtain a more holistic view of knowledge rather than the fragmentation which is characteristic of most academic disciplines. Through the interdisciplinary nature of the program, students develop the ability to make connections between the courses and to synthesize a variety of ideas in different subject areas. Since the English course is integrated with Psychology and Humanities, students are continually reading and writing across the curriculum in a very natural way. Emphasis is placed on students assessing their own learning throughout the year.

The learning community concept is adaptable to other areas. QUANTA has expanded to the sophomore year which integrates science, social science, and communications courses. DBCC has also begun a learning community which integrates four developmental courses. The QUANTA learning community model can be adapted to any academic areas and to any institution of higher learning.

Staff and Professional Development provided funding for the initial development of the program by two faculty members as well as funding for research to assess student outcomes in the QUANTA program.

Admission to the QUANTA program is open to any freshman student who may enroll in Freshman English I.

The cognitive development of students in the QUANTA program has been evaluated through the use of the Measures of Intellectual Development instrument. Students wrote essays at the beginning, middle, and end of the freshman year program which were evaluated for cognitive development by two independent raters outside DBCC. The results of this study give strong support for the effectiveness of the QUANTA program in stimulating significant cognitive development. (see attached report)

Retention rates for students within each semester of the QUANTA program and grade distributions for the three courses in the program have been obtained. (see attached retention rate and grade distribution summaries)

Students complete an evaluation of the program each semester, consisting of both objective ratings and open-ended essay questions. (see attached evaluation form and summary of students' ratings) The objective ratings indicate that overall, students have a very positive experience in QUANTA. However, their answers to the open-ended questions show even more vividly the impact that the experience of QUANTA has on their lives.

Student evaluations of the program are used each semester to make changes in learning activities, texts, and evaluation methods. Positive results from student evaluations and retention studies provided the impetus for developing additional learning communities for sophomores and developmental students.

A Report on the Intellectual Development of Students in the QUANTA Learning Community at Daytona Beach Community College 1989-1990

Cynthia Avens & Richard Zelley

September 1990

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INTRODUCTION

This report summarizes the results of a research study to assess the intellectual development of students in the QUANTA Learning Community at Daytona Beach Community College in the 1989-90 academic year.

QUANTA is a freshman year interdisciplinary program which is currently in its seventh year of operation at DBCC. The faculty involved in QUANTA are currently conducting a study to assess student outcomes in the program. This initial attempt at assessment is using the Measure of Intellectual Development instrument to measure students' cognitive development as they progress through the QUANTA program. This research is being funded through Staff and Program Development at DBCC.

THE MEASURE OF INTELLECTUAL DEVELOPMENT (M.I.D.)

The Measure of Intellectual Development is based on the theory of cognitive development presented by William Perry, Jr. in his book Forms of Intellectual Development in the College Years (Perry, 1970, 1981). Perry conducted a series of longitudinal interviews with Harvard undergraduates during the late 1950's and 1960's. Analysis of these interviews revealed to him a sequential pattern of intellectual development in students, from a rather dualistic and authority centered view of the world and knowledge to a much more complex and relativistic perspective. Because this pattern of intellectual development is representative of liberal learning in Western civilization and the more complex stages are sought after as ideals, the Perry scheme has been used extensively in assessment studies of college education. (Moore, 1988) A summary of the stages or "positions" of Perry's scheme is found in Fig. 1.

A number of paper-and-pencil assessment instruments have been developed based on Perry's scheme. One of these, the Measure of Intellectual Development, was developed by Lee Knefelkamp and Carol Widick at the University of Minnesota. It involves writing an essay in response to a stimulus question having to do with classroom learning, decision making, or career plans. (MacGregor, 1987) The essay is evaluated by trained raters through a content and style analysis to indicate the student's level of intellectual development. The Measure of Intellectual Development rates students according to the "Perry positions" 2-5. A summary of these positions and their characteristics is shown in Figure 2.

THE QUANTA LEARNING COMMUNITY

QUANTA is an interdisciplinary learning community of 75 students and three faculty at DBCC. Three courses, English, Psychology and Humanities, are integrated around a common theme each semester of the freshman year. The faculty teaching these three courses are involved in collaborative teaching. QUANTA includes a mixture of average ability students, honor students, and older, non-traditional students. The interaction of this heterogeneous group of students and faculty is an important component of the learning community.

The emphasis in Quanta is on making connections. The interdisciplinary format requires students to make connections between the disciplines, thus encouraging the ability to integrate and synthesize ideas. Making connections with one another is also stressed in the learning community. Students are encouraged to interact with each other and with their teachers. The role of the teachers is primarily to be facilitators of learning rather than authoritative dispensers of knowledge or transmitters of information. Learning experiences in QUANTA are designed to emphasize active and collaborative learning. Students cooperate with each other through group projects and discussions, experiencing diverse perspectives on issues and problems. The active interchange between students and teachers helps the students to develop independent thinking abilities and to take more responsibility for their own learning.

PROCEDURE

Students in the QUANTA Learning Community generally experience a much more complex learning environment than do students in traditional college classes. Our hypothesis is that participation in this collaborative, active learning environment will result in greater movement along the Perry scale of intellectual development than is usual in traditional classes.

To test this hypothesis, the Measure of Intellectual Development was administered to students in the QUANTA Learning Community on the second day of class of the Fall 1989 semester. Students wrote Essay A: Best Class. (See Figure 3) The M.I.D. was again administered to students on the last day of class of the Fall 1989 term. This time students wrote Essay AP: Ideal Learning Environment. (See Figure 3) A final essay was written during the last week of the Winter term, Essay Q: Learning About Learning. (See Figure 3) Essays were scored by two raters at the Center for the Study of Intellectual Development.* Scores were compared for each student from the beginning to the end of Fall term, and from the beginning of Fall term to the end of Winter term, to determine whether any change in position as measured by the M.I.D. had occurred.

RESULTS

Seventy-five students were enrolled in the QUANTA Learning Community in the Fall 1989 semester; 71 ratable essays were obtained. The mean M.I.D. score on these essays was 2.97. Sixty-four students took the M.I.D. at the end of the term, and 61 essays were ratable. The mean M.I.D. score on these essays was 3.17. The difference between beginning and end of term scores shows a mean change of .20. Fifty-three percent of these students showed a positive change of 1/3 position or more in their intellectual development.

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Forty-five students wrote the final M.I.D. essay at the end of the Winter term. Essays which were ratable at the beginning of Fall term and end of Winter term were obtained for 38 of the students. For this group, the mean M.I.D. score at the beginning of Fall term was 2.96; the mean M.I.D. score at the end of Fall term was 3.2; and the mean M.I.D. score at the end of Winter term was 3.42. The difference between beginning and end of year scores shows a mean change of .46 (see Figure 4). Seventy-six percent of these students showed a positive change of 1/3 position or more in their intellectual development, 50% showed a positive change of 2/3 position, and 10.5% showed a positive movement of one full position or more (see Figure 5).

DISCUSSION

A comparison of the M.I.D. score for QUANTA students with national norms established by Dr. William Moore (1988), as shown in Figure 7, indicates that QUANTA students show a greater movement along the Perry scale on intellectual development than do students in traditional college classes. In fact, the mean change of position for QUANTA students (.20) was greater in one semester than the mean change of position for students in the normative sample (.18) after four years of college. The mean score for QUANTA students at the end of their first semester in college, 3.17, is comparable to junior and senior level students at other colleges in terms of the intellectual meanings they are making out of their experiences. These results, along with the fact that the majority of QUANTA students experienced a change in position of .33 or greater, gives strong support for the effectiveness of the QUANTA Program in stimulating significant intellectual development in a short period of time.

QUANTA is unique among community colleges in the nation for running a learning community for a full year with the same faculty. The year-long assessment showed that students who remained in the QUANTA program and completed the testing sequence showed a similar amount of growth in the second semester as in the first. The total mean change for the year (.46) indicates that the average intellectual growth was almost half a position on the Perry scale. These results strongly support the importance of the second semester of the QUANTA program for increasing students' intellectual growth.

In summary, the results of this research support the hypothesis that participation in the QUANTA program with its collaborative, active learning environment promotes significant movement along the Perry scale of intellectual development. The research also shows that the M.I.D. scores for the QUANTA Learning Community compares favorably with other learning community programs throughout the nation. (see Figure 6)

FUTURE RESEARCH

Research with the M.I.D. is continuing this year with the 1990-91 group of QUANTA students in order to obtain a larger sample size. Students in traditional English, Psychology and Humanities classes are also being tested on the M.I.D. in order to obtain a control group at DBCC.

DBCC has the unique advantage of having a two-year learning community program, which allows the cognitive development of students to be studied over a long period of time. Therefore we are planning to continue the M.I.D. evaluation this year with students who complete the second year interdisciplinary program.

The assessment of students' intellectual development while in the QUANTA program is just one part of a larger research study to evaluate the effectiveness of the program. Research is also being done to compare retention rates and achievement of QUANTA students and students in traditional classes, success in future academic work after leaving DBCC, and students' perceptions of their experience in the program.

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Figure 1.

Perry's Scheme of Intellectual and Ethical Development

Dualism modified	Position 1	Authorities know, and if we work hard, read every word, and learn Right Answers, all will be well.
	Transition	But what about those Others I hear about? And different opinions? And Uncertainties? Some of our own Authorities disagree with each other or don't seem to know, and some give us problems instead of Answers.
	Position 2	True Authorities must be Right, the others are frauds. We remain Right. Others must be different and Wrong. Good Authorities give us problems so we can learn to find the Right Answer by our own independent thought.
	Transition	But even Good Authorities admit they don't know all the answers *yet*!
	Position 3	Then some uncertainties and different opinions are real and legitimate *temporarily*, even for Authorities. They're working on them to get to the Truth.
	Transition	But there are *so many* things they don't know the Answers to! And they won't for a long time.
	Position 4a	Where Authorities don't know the Right Answers, everyone has a right to his own opinion; no one is wrong!
	Transition *(and/or)*	But some of my friends ask me to support my opinions with facts and reasons.
Relativism discovered	Transition	Then what right have They to grade us? About what?
	Position 4b	In certain courses Authorities are not asking for the Right Answer; They want us to *think* about things in a certain way, *supporting* opinion with data. That's what they grade us on.
	Transition	But this "way" seems to *work* in most courses, and even outside them.
	Position 5	Then *all* thinking must be like this, even for Them. Everything is relative but not equally valid. You have to understand how each context works. Theories are not Truth but metaphors to interpret data with. You have to think about your thinking.
	Transition	But if everything is relative, am I relative too? How can I know I'm making the Right Choice?
Commitments in Relativism developed	Position 6	I see I'm going to have to make my own decisions in an uncertain world with no one to tell me I'm Right.
	Transition	I'm lost if I don't. When I decide on my career (or marriage or values) everything will straighten out.
	Position 7	Well, I've made my first Commitment!
	Transition	Why didn't that settle everything?
	Position 8	I've made several commitments. I've got to balance them—how many, how deep? How certain, how tentative?
	Transition	Things are getting contradictory. I can't make logical sense out of life's dilemmas.
	Position 9	This is how life will be. I must be wholehearted while tentative, fight for my values yet respect others, believe my deepest values right yet be ready to learn. I see that I shall be retracing this whole journey over and over—but, I hope, more wisely.

*From Perry, W. G., Jr., "Cognitive and Ethical Growth: The Making of Meaning." In A. Chickering and Associates, The Modern American College. San Francisco: Jossey-Bass, 1981, Chapter 3, pp. 76–116.

Figure 2.

Translation of Perry Model into Student-as-Learner Characteristics

Cue Categories	Position 2	Position 3	Position 4	Position 5
View of Knowledge and Learning	•focus on what to learn-content, facts •knowledge = collection of information	•focus on how to learn-processes, methods •"good" learning is practical, relevant	•focus on how to think •"New Truth"	•focus on how to think in context •rules of adequacy to judge knowledge
Role of Authority	•Teacher is source of right answers •Teacher is responsible for the learning	•Teacher is source of methods to right answers •Teacher assumes multiple roles	•Teacher is source of ways to think •Student either clings to authority(Adh.) or discounts expertise(Opp.)	•Teacher is source of expertise •Student seeks mutuality of learning
Role of Learners/Peers	•Learner responsibility is to reproduce information •Peers rarely mentioned other than notations of friends in class	•Learner responsibility is to work hard •Peers are interesting sources of diversity	•Learner responsibility is to think independently •Peers are legitimate sources of learning because everyone has a right to own opinion	•Learner responsibility to exercise the mind •Peers are truly legitimate sources of learning
Language	•absolutes •dichotomies	•qualifiers •vague, unspecific terms (fuzzy)	•absolutes within multiplicity •dichotomies, but more elaborate than a 2	•language demonstrates analysis and synthesis •extensive self-process
Multiples/Quantity	•simplistic lists •little or no recognition of multiples	•quantity terms •"corraling"	•multiplicity/diversity seen as part of learning process •quality begins to be as, and sometimes more important than,quantity	•integration of multiples •multiplicity/diversity is assured
Atmosphere	•safe learning environment •structured, traditional formal process preferred	•variety of methods endorsed •less formal & traditional processes accepted	•may reject rote learning, memorization •non-traditional teaching is acceptable	•excited by ideas •search for synthesis endorsed
Role of Evaluation	•values clear, straightforward approach •test questions should be clear-cut	•concern with fairness •hard work = good grades	•may question teacher's right to evaluate student •learning to accept qualitative criteria as legitimate in evaluation	•separates evaluation of work from evaluation of self •values qualitative feedback

Adapted from Knefelkamp, L. L., & Cornfeld, J. L. "Combining Student Stage and Style in the Design of Learning Environments: Using Holland Typologies and Perry Stages," 1979 (Available from CADI)

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April, 1984

Figure 3.

MID Essay Questions

ESSAY A: Best Class

Describe the best class you've taken in high school or college. What made it positive for you? Feel free to go into as much detail as you think is necessary to give a clear idea of the class: for example, you might want to discuss areas such as the subject matter, class activities (readings films, etc.), what the teacher was like, the atmosphere of the class, grading procedures, etc. -- whatever you think was important. Please be as specific as possible, giving a complete description of your experiences and how you felt about it.

ESSAY AP: Ideal Learning Environment

Describe a class that yould represent the ideal learning environment for you. Please be as specific and concrete as possible about what this class yould include; we want you to go into as much detail as you think is necessary to give us a clear idea of this ideal class. For example, you might want to describe what the content or subject matter would be, the evaluation procedures that would be used, the demands on you as a student, what the teacher/s would be like, and so on. We want a complete description of what you would see as an ideal class.

ESSAY Q: Learning About Learning

Look back on your experiences in this class, and reflect on your discoveries about yourself as a learner. Please be as specific and concrete as possible about what stood out for you about this class: we want you to go into as much detail as you think is necessary to give us a clear idea of your learnings in this class. For example, you might want to discuss any of all of the following topics: the content/subject matter, the kinds of teachers and teaching you experienced, the classroom atmosphere, and/or the evaluation procedures that were used. Through these experiences, what have you learned about yourself as a learner?

FIGURE 4

MEASURE OF INTELLECTUAL DEVELOPMENT IN THE
QUANTA LEARNING COMMUNITY AT DAYTONA BEACH COMMUNITY COLLEGE

Data for all students with ratable essays

Beginning of Fall term mean	End of Fall term mean	Mean Change	End of Winter Term mean	Total Mean Change
2.97 (N=71)	3.17 (N=64)	.20	3.43 (N=43)	.46

Data for all students who completed testing sequence*

Beginning of Fall term mean	End of Fall term mean	Mean Change	End of Winter Term mean	Total Mean Change
2.96 (N=38)	3.2 (N=37)	.24	3.42 (N=38)	.46

* 45 students wrote the final essay. Of these, three were students who began QUANTA in the Winter term; two students had first essays which were unratable; two students had final essays were were unratable.

FIGURE 5

POSITION CHANGE ON THE MEASURE OF INTELLECTUAL DEVELOPMENT FOR STUDENTS IN THE QUANTA LEARNING COMMUNITY AT DAYTONA BEACH COMMUNITY COLLEGE

Data for all students with ratable essays for beginning and end of Fall Term: N = 61

-1.17	-.50	-.33/.34	0	+.33/.34	.66/.67	.83	1.00	1.17	1.33
1	1	13	14	20	5	2	3	1	1

Data for all students who completed the testing sequence: N=38

-.33	0	.17	.33/.34	.50	.66/.67	.83	1.00	1.17
1	7	1	9	1	14	1	3	1

Figure 6.

MEASURE OF INTELLECTUAL DEVELOPMENT
IN SELECTED LEARNING COMMUNITY PROGRAMS IN WASHINGTON STATE

1987-88 Academic Year

Program and Institution	Duration	Pre-mean	Post-mean	Positive Change*
TESC Coordinated Study: "Human Development"	3 quarters	2.96 (N-85)	3.34 (N-49)	57%
TESC Coordinated Study: "Matter and Motion"	3 quarters	2.97 (N-55)	3.27 (N-28)	63%
TESC Coordinated Study: "Art, Music and Literature"	3 quarters	3.04 (N-83)	3.38 (N-55)	58%
TESC Coordinated Studies: "Society & the Computer"	3 quarters	2.90 (N-81)	3.22 (N-56)	68%
North Seattle Community College Coordinated Study "Gods, Heroes & Humans"	1 quarter	2.98 (N-51)	3.43 (N-30)	73%
Seattle Central Community College Coordinated Study "Science Shakes the Foundations"	1 quarter	3.13 (N-23)	3.48 (N-23)	67%
Centralia Coll. Federated Programs "Wilderness" and "Bioethics"	1 quarter each	2.67 (N-8)	3.04 (N-12)	57%
Seattle U. Matteo Ricci Mixed group of HS Seniors and S.U. freshmen enrolled in course, "Composition, Language and Thought"	1 quarter	2.79 (N-21) 2.89 (N-25) 2.83 (N-25)	2.77 (N-49)	34%

* Indicates percent of sample showing +1/3 or more development.

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Figure 7

MEASURE OF INTELLECTUAL DEVELOPMENT: NORMATIVE DATA*

Classification	N	Mean	Position 2	Tr*	Position 3	Tr	Position 4	Tr	Position 5	(%s)
Freshmen	1695	2.80	4.7	44.1	38.9	11.0	1.3			
Sophomores	367	2.88	1.9	42.0	37.6	15.3	2.7	0.5		
Juniors	358	2.91	2.5	33.0	47.2	15.4	1.4	0.3	0.3	
Seniors	337	2.98	1.8	29.7	46.9	15.4	4.7	1.5		
Age										
18	378	2.87	1.1	40.5	45.0	11.4	2.1			
19	229	2.81	1.3	48.9	38.9	7.9	3.1			
20	200	2.87	0.5	41.0	44.5	11.5	2.5			
21	116	2.91	0.9	35.3	46.6	15.5	1.7			
22+	99	2.90		43.4	41.4	10.1	2.0	2.0	1.0	
Gender										
Males	526	2.92	1.7	40.1	37.2	15.7	4.3	0.5	0.1	
Females	1287	2.89	1.0	37.2	47.0	11.8	2.4	0.3	0.1	

*Tr - Transition

* courtesy Bill Moore, Center for Applications of Developmental Instruction, 806 High Street, Farmville, VA 23901.

QUANTA Retention Rates

By Cynthia Avens and Richard Zelley

September 1992

Retention rates for QUANTA students have been computed for each semester since 1985. (See Figure 1) Retention rates are based on the percentage of students who have completed the term in QUANTA without a grade of "W". For this data, grades of "W" could be initiated by the student or teacher.

RESULTS

Retention rates for the fall semester ranged from 84% to 99%, with a mean of 92%.

Retention rates for the Winter semester ranged from 78% to 100%, with a mean of 94%.

DISCUSSION

The high retention rates for students which are found in QUANTA support the value of the learning community for keeping students involved in school. This is consistent with many research studies which show that cooperative learning experiences tend to lower attrition rates in college. (Johnson, Johnson & Smith, 1991) Comments on student evaluation forms indicate that many students feel more actively involved in their courses in QUANTA than in traditional courses, they value the opportunity to really "belong" to a group, and find great help in the support and encouragement of their classmates and teachers when experiencing academic or personal problems. These are all factors which aid student retention. Many students have directly stated in their evaluation of the program that had they not been enrolled in a program like QUANTA, they believe they would not have made it through their freshman year. These results suggest that the use of cooperative learning techniques should be looked at more closely throughout the college as an aid to helping students remain in school.

Reference

Johnson, David W., Roger T. Johnson, and Karl A. Smith. Active Learning: Cooperation in the College Classroom. Minnesota: Interaction Book Company, 1991.

IOF037XS-ROH240

Figure 1

QUANTA RETENTION RATES

	# STUDENTS ENROLLED	RETENTION RATE
1985-1	69	91%
1985-2	60	100%
1986-1	76	99%
1986-2	58	100%
1987-1	76	84%
1987-2	39	92%
1988-1	70	93%
1988-2	55	78%
1989-1	78	90%
1989-2	44	98%
1990-1	75	92%
1990-2	52	90%
1991-1	77	97%
1991-2	67	98%

STUDENT EVALUATIONS OF THE QUANTA PROGRAM

By Cynthia Avens and Richard Zelley

September 1992

During its eight years of operation, the QUANTA program has gone through a continual process of development. There has been continuous evaluation of the program and changes have been made in curriculum, learning activities, evaluation of students, procedures and policies, etc., based on this evaluation. The major sources for evaluation of the program have been the students in QUANTA. Much of the evaluation by students is informal and verbal. During the first four years of the program, written evaluations were solicited from the QUANTA students by asking them to respond to open-ended questions regarding their reactions to various aspects of the program. In 1988 we developed an objective evaluation form for QUANTA so that we could make comparisons of student evaluations from different years.

PROCEDURE

The QUANTA evaluation form has ten objective questions and five open-ended questions (see Figure 1). The evaluation form has been administered to students during the last week of class in both terms since the Winter term of 1988. The distribution of students' ratings, means and standard deviations were computed for each of the objective questions each term.

RESULTS

The results of the student evaluations on the objective questions can be seen in Figures 2-8.

Questions 1-8 attempt to determine which specific outcomes of the program seem to be most important to students. The rank ordering of these outcomes is fairly consistent across the semesters, particularly for those at the top and the bottom of the ranking. Figure 9 shows the overall mean for each question and its rank order. Question #2, "The QUANTA experience helped me realize that there are multiple perspectives with which to view an issue," was given top position in the rank order. In fact, Question #2 was given the highest ranking in six of the seven semesters, and was in second place in the other semester. The next three positions were given respectively to Question #1, "The QUANTA experience helped me to see the relationships between courses;" Question #8, "The QUANTA experience was worthwhile because it gave me the opportunity to learn from other students as well as faculty;" and Question #7, "The QUANTA experience was worthwhile because of the 'active learning' methods used." These three questions often appeared in second or third place in the individual semesters. Position 5 was given to Question #6, "The QUANTA experience was worthwhile because of the friendships I made," and position 6 was given to Question #4, "The QUANTA experience helped me learn how to work effectively in group situations." There was much more diversity across semesters regarding the ranking of these two questions. However, consistency appeared again in the ranking of the questions with the lowest ratings. Position 7 was given to Question #5, "The

QUANTA experience helped me gain self-confidence," and position 8 was given to Question #3, "The QUANTA experience helped improve my ability to speak in front of a group." These two questions appeared in the last two places in every semester.

Questions 9 and 10 attempt to elicit the student's general assessment of the program. Question #9, "Overall, the QUANTA experience was worthwhile for me," received a rating in the range of 4.32-4.84 across the semesters. The mean rating for this question was 4.55. Question #10, "I would recommend QUANTA to other students," received a rating in the range of 4.24-4.86 across the semesters. The mean rating for this question was 4.54.

DISCUSSION

The consistency of the high ratings on the student evaluation form over four years indicates the value of the program for most of the students who have participated in it. In particular, questions which assess the students' overall reaction to the program were given the highest ratings.

The questions regarding specific outcomes of the program which received the highest ratings indicate that students particularly value the interdisciplinary nature of QUANTA. Collaborative teaching of three courses helps students realize that there are multiple perspectives with which to view an issue and helps them see the relationship between courses.

Students seemed to feel that their QUANTA experience did not help them as much in gaining self-confidence and in improving their ability to speak in front of a group as it did in attaining the other outcomes. These findings are rather hard to interpret, however, because it may be that many students believe they already have these skills. In fact, a number of students wrote comments on the evaluation form to indicate that their low rating on these items was because they felt they already possessed self-confidence or good speaking skills.

The objective evaluation form has proven very useful and interesting to us in providing information about the aspects of the program which are particularly valuable for students. However, numbers alone cannot portray the richness of the QUANTA experience. The complexity of the learning environment, with its emphasis on cooperative learning and higher-order thinking skills, presents a challenge to students which yields diverse reactions from them. For many students, their participation in QUANTA becomes a transformative experience. It may also at times be very stressful and painful, as is true of most growth experiences.

It is the open-ended questions on the evaluation form which give us this broader, more personal perspective of the students' actual experience in QUANTA. In addition, students write an essay at the end of the term in which they are asked to describe what they have discovered about themselves as a learner. This essay also provides us with more detailed, personal reactions to their experience in QUANTA. The following excerpts from a few of these papers help to give the sense of meaning and intensity that the QUANTA experience has for many students:

> "QUANTA has provided me with the ideal working techniques and atmosphere that enabled me to have the solid foundation that I need. The method by which the contents of QUANTA are integrated together allowed me to go below the surface of the subject matter. In other classes I found that subjects are taught at a surface level. Most of the learning techniques are based on memorization and recall. Nothing was deeply processed as in QUANTA. This deep processing gave me an understanding of what I was studying. It forced me to formulate reasons to back up my opinions. Lastly, it taught me that the answers are not always in black and white . . . The atmosphere of QUANTA is ideal to express individual ideas. It gives students a chance to hear other points of view or perspectives on a subject, rather than just their own. It has helped me to remain open minded and taught me that my point of view is not the only one that is right."

> "In QUANTA where we get to explore the basic tenants of the individual disciplines and simultaneously discover the 'big picture' of complexity and interconnectedness, I have found a learning experience which not only is worth the effort but is irresistable! My personal learning style has flourished in the setting of looking at subjects from multiple perspectives and interrelating these angles and the subjects . . . I have learned that learning is a challenge and I want to continue the quest!"

> "I believe if I chose regular classes instead of the QUANTA program, I might never have made this very difficult first year. I have never been able to focus on anything in my life. I just lacked the discipline it takes to see anything through. QUANTA, through its compassion and its authenticity woke me after a long hibernation . . . I will not let anyone ever tell me that you can't learn and have fun simultaneously. I have done it. The way the classes are interrelated definitely adds a zest to the experience of learning. This year, exclusively because of QUANTA, I have come to the conclusion, one which represents a new way of life—I am a most adept learner. I hope my feelings to become involved in my lifetime; to show action, not apathy, will grow into solid convictions as I mature."

"I believed that I wasn't as smart as the others. One thing that I have learned is that each person is different. One might be extremely smart while the other is extremely thoughtful or creative. You might call that learning to be more respectable towards yourself and your capabilities . . . I guess the one thing I've learned about this whole year is me. I've learned what makes me tick."

"QUANTA has taught me social respect and a general knowledge toward many different types of people. It has also taught me how to totally focus on a certain item, to really become part of whatever I'm doing. This has helped me not only in my schoolwork, but in my job and social life as well. I find myself to be more relaxed during pressure, having confidence in what I'm doing. This usually results in positive ways that help me do things that before I might not of been able to . . . In QUANTA I felt as if the teachers were my friends and if I would of had a problem they would of known about it and helped me out. This is the ideal setting that every classroom should strive for. It is so much easier to learn from a friend than to get taught by a teacher."

"Being in QUANTA has taught me to learn and get to know more about myself . . . I began to learn who I really was. Through learning more about myself, I learned to learn more about other people around me also. When I came into QUANTA, I stereotyped everyone, but I guess that is only typical. As the semester rolled by, I met different people in QUANTA when working in groups, and I began to learn about people on the inside and not just on the outside. I do not stereotype people any more and now I believe that all people are only human and what they make of themselves is their own choice and people should accept them for who they are . . . All in all, QUANTA has been the BEST experience for me so far in my life."

"I learned that there are multiple views of many issues. Due to the less structured roles of the 'teacher' and 'student' I learned you can learn from others—no one is ever too educated. Many of the issues discussed, individuals who had a particular interest were knowledgeable enough on the subject to educate the others. I especially liked this because I feel it is a specific benefit of QUANTA. In other classes that individual would most likely never had the opportunity to share his knowledge. Instead, the teacher would be considered the all-knowing. I found the interrelating of subjects beneficial in the actual comprehending of subject matter. This FORCED students to apply what they had learned in one subject to another. I have to admit, in the beginning this was difficult for me. In high school, students become so accustomed to looking the

answers up in the chapter. It requires more than regurgitation in order to relate the material. However, the major benefit is I can still remember the material I had to apply."

"QUANTA has been quite an experience for me, of the courses I've taken this maniac year, QUANTA is the only one where I felt like I belonged. A lot about my outlook on learning has changed since that first day I wore a name tag around. Never before in my educational adventure did I have a group to relate to and struggle along with. I would definitely say that the group helped me a lot . . . I could sense that we had achieved community when I saw passionate and well considered statements come forth instead of simple answers. I think one of the best things about the community was the diverse range of perspectives . . . As trying as it can be, as difficult as it may be to achieve, QUANTA has reawakened in me the desire to learn. Seeing as I do the rewarding promise of discovery. I find inspiration to learn more about me, to learn more about life . . . It can be hard to grow, but nothing could ever be more enlightening. The most powerful form of strength or courage is believing in yourself. I think this belief is the most important lesson that I have learned, and for that I would like to say thanks."

Figure 1

QUANTA EVALUATION

Please circle the number indicating the extent to which you agree with each of the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The QUANTA experience helped me to see the relationships between courses.	1	2	3	4	5
2. The QUANTA experience helped me realize that there are multiple perspectives with which to view an issue.	1	2	3	4	5
3. The QUANTA experience helped improve my ability to speak in front of a group.	1	2	3	4	5
4. The QUANTA experience helped me learn how to work effectively in group situations.	1	2	3	4	5
5. The QUANTA experience helped me gain self-confidence.	1	2	3	4	5
6. The QUANTA experience was worthwhile because of the friendships I made.	1	2	3	4	5
7. The QUANTA experience was worthwhile because of the "active learning" methods used such as group discussions, role playing, program seminars, etc.	1	2	3	4	5
8. The QUANTA experience was worthwhile because it gave me the opportunity to learn from other students as well as faculty.	1	2	3	4	5
9. Overall, the QUANTA experience was worthwhile for me.	1	2	3	4	5
10. I would recommend QUANTA to other students.	1	2	3	4	5

IKC193XB

Please respond to the following questions:

1. How did you first learn about QUANTA?

2. Why did you enroll in QUANTA? Did it live up to your expectations? Please explain.

3. In what ways has being in QUANTA helped you this term?

4. What were the strengths of the QUANTA experience?

5. What changes would you suggest for QUANTA in future years?

Figure 2

Winter 1988

N = 40

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	0	0	2	21	17	4.38	.59
2.	0	0	3	15	22	4.48	.64
3.	0	2	14	17	7	3.72	.82
4.	0	0	8	19	13	4.13	.72
5.	0	4	18	8	10	3.6	.98
6.	0	1	5	15	19	4.3	.79
7.	0	0	2	18	20	4.45	.60
8.	0	0	5	17	18	4.33	.69
9.	0	2	0	16	22	4.45	.75
10.	0	0	2	11	27	4.63	.59

IOF036XE

Figure 3

Fall 1989

N = 58

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	0	3	10	22	23	4.12	.77
2.	0	0	6	24	28	4.38	.45
3.	3	7	17	20	11	3.5	1.10
4.	1	0	11	30	16	4.03	.79
5.	2	2	18	22	14	3.76	.98
6.	0	4	8	17	29	4.22	.94
7.	2	1	11	23	21	4.03	.95
8.	1	0	5	27	25	4.29	.77
9.	1	1	6	20	30	4.32	.87
10.	1	2	5	18	32	4.34	.83

Figure 4

Winter 1990

N = 44

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	0	0	1	9	34	4.75	.24
2.	0	0	0	4	40	4.9	.29
3.	0	2	3	11	28	4.48	.82
4.	0	0	1	13	30	4.66	.53
5.	0	1	5	11	27	4.45	.79
6.	0	0	1	14	29	4.64	.53
7.	0	1	1	8	34	4.70	.40
8.	0	1	0	9	34	4.73	.59
9.	0	0	1	5	38	4.84	.43
10.	0	0	1	4	39	4.86	.41

Figure 5

Fall 1990

N = 59

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	2	1	4	30	22	4.17	.89
2.	0	2	6	23	28	4.31	.79
3.	1	1	23	28	6	3.63	.76
4.	1	1	8	37	12	3.98	.75
5.	3	3	17	25	11	3.64	1.01
6.	0	2	8	31	18	4.10	.76
7.	2	1	6	23	27	4.22	.95
8.	1	2	5	30	21	4.15	.85
9.	3	1	2	21	32	4.32	1.00
10.	4	0	6	17	32	4.24	1.10

Figure 6

Winter 1991

N = 37

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	0	0	2	15	20	4.49	.60
2.	0	0	2	10	25	4.62	.59
3.	0	2	12	11	12	3.89	.92
4.	0	0	5	18	14	4.24	.67
5.	0	1	10	16	10	3.95	.80
6.	0	1	4	15	17	4.30	.77
7.	0	0	4	15	18	4.38	.67
8.	0	0	1	16	20	4.51	.55
9.	0	0	1	9	27	4.70	.51
10.	0	0	2	14	21	4.51	.60

Figure 7

Fall 1991

N = 65

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	1	0	4	29	31	4.37	.74
2.	0	1	3	30	31	4.4	.65
3.	1	5	32	19	8	3.43	.86
4.	1	1	10	40	13	3.97	.74
5.	3	4	19	26	13	3.65	1.01
6.	2	1	10	15	37	4.29	.99
7.	0	1	6	25	33	4.38	.72
8.	0	1	6	32	26	4.28	.69
9.	0	2	2	20	41	4.54	.70
10.	0	2	5	12	46	4.57	.76

Figure 8

Winter 1992

N = 57

Number Giving Rating

	1	2	3	4	5	Mean	SD
1.	0	0	2	14	41	4.68	.54
2.	1	0	2	14	40	4.61	.72
3.	2	2	15	18	20	3.91	1.03
4.	1	0	15	17	24	4.11	.91
5.	1	3	14	20	19	3.93	.97
6.	0	1	7	20	29	4.35	.76
7.	1	0	5	18	33	4.44	.80
8.	0	1	3	20	33	4.49	.68
9.	1	1	0	11	44	4.68	.73
10.	1	0	4	10	42	4.61	.77

Figure 9

Specific Outcomes of Program

	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Q.8
Mean for all terms	4.42	4.53	3.79	4.16	3.85	4.31	4.37	4.4
Rank order	2	1	8	6	7	5	4	3

General Evaluation of Program

Q.9: "Overall, the QUANTA experience was worthwhile for me."
Mean for all terms: 4.55

Q.10: "I would recommend QUANTA to other students."
Mean for all terms: 4.54

The QUANTA Experience in Retrospect:

Reflections by QUANTA Alumni

By Cynthia Avens and Richard Zelley

September 1992

As faculty in the QUANTA program, we have had many former students return to tell us that an appreciation of their experiences in QUANTA has grown since leaving the program. It seems that the passage of time, increased maturity, and broader experience of college and/or career may help students put their freshman year of QUANTA into perspective. We wondered what aspects of the program would seem most important to students after they had completed QUANTA and gained further educational and life experiences. Would "QUANTA alumni" tend to hold similar views to students currently completing the program regarding its most significant features? Or would their different perspectives reveal differences in the way these two groups of students view their experience in QUANTA? In order to find out, we sent a questionnaire to QUANTA alumni which asked them to reflect on their thoughts and feelings about participating in the QUANTA Learning Community.

PROCEDURE

In the Spring of 1990 a questionnaire was sent to all students who had completed the QUANTA program prior to that time. The "QUANTA Alumni" questionnaire is shown in Figure 1. Questionnaires were sent to students from the first 5 years of QUANTA. Since the current address for the majority of these students was unknown, we realized that only a portion of the students would actually get the questionnaire. We received 55 questionnaires back, with each year of QUANTA represented in the replies. It was a very positive and inspiring experience for us to hear from these students. Many included personal letters with the questionnaire, telling us about their endeavors after QUANTA, their further educational experiences, careers, marriages and children, etc. It was very heartening for us to see that many of the "seeds" that had been planted in QUANTA seemed to have blossomed so well!

For the purpose of this study, the item on the questionnaire which was most important for our evaluation was the open-ended question, "Looking back, what do you thank was most beneficial about your QUANTA experience?" Answers to this question were grouped according to common theme, and then tabulated in order to gain some insight into the features of the program which stand out for students years after their experience in QUANTA.

RESULTS

Many of the former QUANTA students included more than one feature of the program which they thought was most beneficial. Their answers were grouped into the following 8 major categories:

1. **Community Experience**
   32 students described some aspect of the "community" structure of QUANTA as being most beneficial, such as the social interaction, group work, cooperative learning, etc. There appeared three major values in this interactive community experience for students.

   First, students found the experience of working in groups, learning about group dynamics and cooperating with others to be very valuable. This was especially mentioned by students who had already entered their career fields and now realized how extremely important group skills are on the job. One student, who now works on an audit team for a financial institution, said QUANTA's greatest value for her was that she learned how to be a "team player"; "(it) helped me to learn leadership, compromise and completing a project as a group."

   Second, many students described the friendships they had made in the QUANTA community as something they highly valued. Because of the nature of the learning experience, many developed friendships which were deeper than any they had experienced before. Many of these friendships seemingly have survived over the years; many QUANTA students have gone on to become roommates when transferring to a university. Students also valued the opportunity to become friends with a wide variety of people. Some mentioned they became close friends with people they never would have considered "friend material" before. One young man summarized these feelings as, "I am forever grateful to QUANTA for bringing people from different backgrounds and worlds together as friends."

   The third value in the community experience for students seemed to lie simply in the feeling of really belonging to a supportive group of people. In an increasingly impersonal world, it seems that a major strength of the learning community is its ability to help overcome the feeling of alienation. As one student put it, the value of belonging to the community was "being part of a whole, stumbling together, not alone; the doubling, tripling, quadrupling, etc. sense of pride and accomplishment when one or all of us had a success."

2. **Interdisciplinary Course Structure**
14 students described the interdisciplinary nature of the QUANTA program as being most beneficial. They mentioned the integration of the courses, the holistic teaching, and the ability to see how topics relate in different fields of study as being very helpful to them. A common theme that emerged in many of the answers was that this interdisciplinary approach helped them to look at the "big picture" or "develop a broader outlook," instead of simply focusing on "bits and pieces" of an issue. Many of those already involved in careers especially cited the ability to look at things holistically as being very important in their work.

3. **Development of Critical and Creative Thinking**
11 students described benefits of the QUANTA program which indicated a growth in their thinking abilities. This included learning "how to think," looking at things in more depth, opening their minds, and developing creativity. As one student said, "the constant push to question ... has changed my life in this respect."

4. **Personal Growth**
10 students described personal traits or abilities which they developed through their experience in QUANTA as being most beneficial. Development of confidence and interpersonal skills were cited most often. A number of students mentioned becoming involved as leaders of organizations at their transfer colleges (fraternity presidents, editor of college newspaper, etc.) as a direct result of the skills and confidence they had gained in QUANTA. A number of students also mentioned in a more general way how their QUANTA experience had helped them grow in self-knowledge and self-esteem. For example, one student said, "I feel that I found out who I was and learned to really like myself in QUANTA. It changed my life!" Another said, " I credit QUANTA with making me who I am today."

5. **Transition to College**
9 students stated that their experience in QUANTA had helped ease their transition to college. The type of learning atmosphere made the change from high school "not so scarey." Many stated that the course material and study skills they had learned in QUANTA helped ease their transition to the university. Many also cited their increased desire to continue their education was due to the experience they had in QUANTA. Among older non-traditional students, the supportive yet challenging environment of the learning community seems to be particularly helpful in easing their transition back into the classroom. One of these students said, "As an older student, I gained confidence and a desire to continue my education. I'm still using the wisdom I gained in QUANTA on my job and at UCF." Another student, now a lawyer working in the State Attorney's office, said, "The confidence QUANTA gave me could not have been obtained in a traditional academic setting. QUANTA gave me the impetus to take other challenging classes and complete an education that seven years ago I thought was impossible...I realize that had my first semester of college been 'traditional' it is unlikely I would have been sufficiently inspired to say, 'Yes, I can be a lawyer,' and then do it at my age."

6. **Teachers' Characteristics and Attitudes**
7 students described specific qualities of the teachers which they thought made their experience most beneficial. These traits were caring, acceptance of students, and encouragement. This supportive attitude of the teachers was seen to be especially important in the development of a learning community in which students could learn with and from each other. One student said, "The attitues of the instructors made it possible for the class to be open." Another student said she valued the teaching style where "my opinion was listened to and discussed."

7. **Enjoyable Learning Experience**
6 students said that what was most beneficial was that QUANTA made learning enjoyable for them. Learning became "fun and interesting." The positive attitudes toward learning that they gained from their QUANTA experience helped motivate them to continue their learning after finishing the program.

8. **Teaching Methods**
4 students mentioned specific teaching methods as most beneficial to them. Of greatest value was the diversity of teaching techniques and "active learning" methods such as group projects, role plays, discussions, etc.

DISCUSSION

A comparison of answers to open-ended questions about the value of the QUANTA experience reveal many similarities between currently enrolled students and QUANTA "alumni". Over and over again, we hear about the value of working with others, developing friendships in the classroom, learning to see the "big picture", learning to question and look at things in greater depth, developing self confidence, learning how to study and developing skills for success in future college work, and gaining the motivation to continue education and lifelong learning. It therefore appears that the factors which current students consider to be most beneficial in their QUANTA experience continue to be meaningful after leaving the program.

One interesting difference which appeared was that on objective evaluations, QUANTA students rated the interdisciplinary nature of the program as being its most valuable aspect for them while in the program. However, QUANTA alumni overwhelmingly emphasized the importance of the community experience for them. This difference may be due simply to the differences in the format for the two questionnaires. However, it is also likely that the experience of community is actually seen as more meaningful with further educational and life experience. It may be that with greater distance from the program, students realize how unfortunately rare the experience of a learning community is in education. For example, one former QUANTA student wrote while attending law school that he now looked back longingly at the atmosphere in QUANTA because it was the only learning environment in his entire education which had stressed cooperation among students. His comparision of the community atmosphere in QUANTA and the cut-throat competition in law schol was quite poignant. Another reason that students might increasingly value the community experience with the passage of time is that they may realize more the importance of learning how to work with others in groups. This was also supported by statements from a number of students who had already entered their career fields that they felt well prepared by QUANTA because their jobs required them to work as a part of a team.

The results which we have obtained from both current student evaluations of the QUANTA program as well as from QUANTA alumni are very consistent with similar research conducted with other learning communities. A recent study conducted at Seattle Central Community College in Washington examined outcomes of their learning community experience that students described in self evaluations at the end of the program. The most frequent outcomes described by students were "developing self-esteem and motivation, developing sensitivity and respect for others, building community, making interdisciplinary connections, becoming life-long learners, and building fundamental communication and writing skills." (McGregor, 1991) These are the same major outcomes described by QUANTA students. It is significant that learning communities at the opposite ends of our nation are producing similar benefits for their students. This finding further supports the educational value of the learning community. This type of structure for learning, which emphasizes cooperation among students and faculty as well as connections between the disciplines, provides a very positive foundation for students' further education, work and life.

Reference

MacGregor, Jean. "What Difference Do Learning Communities Make?" Washington Center News 6.1 (1991)

Figure 1

QUANTA QUESTIONNAIRE

Name: _____

Social Security Number: _____ Phone Number: _____

Present Address: _____

Permanent Address: _____

PART I. If you continued your college education after DBCC, please answer the following questions. If not, skip to Part II.

1. What college(s) have you attended since DBCC?

_____

_____

2. What is (was) your major field of study?

_____

_____

3. List any college degrees that you have received.

_____

4. What is (was) your approximate grade point average for all courses taken in the upper division?

_____

5. Have you ever been admitted to graduate school? If so, where and when?

_____

PART II.

1. Did you receive an A.A. degree from DBCC?

___ Yes ___ No

2. Are you currently in school?

___ Yes ___ No

If so, where? _____

3. Are you currently working in a job that is related to your career choice?

___ Yes ___ No

If so, describe your job.

_____

_____

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